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EVALUATION OF INCREASED PAVEMENT LOADING

Volume I - Research Results and Findings

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16. Abstract

The effects of increased truck loads and higher tire pressures on performance of flexible pavements were investigated in this project. This Volume 1 report presents the research performed and the useful results obtained.

Tire pressure studies were performed using both in-field measurements and theoretical simulations of the effects of tire pressures on pavements. Higher tire pressures were found, in general, to reduce pavement life.

A new mechanistic damage model was developed to allow the evaluation of the effects of loads and tire pressures on pavements. A new set of equivalence factors were developed using the damage models. The resulting equivalence factors were incorporated into a computer program to calculate 18-kip equivalent single axle loads. The programs also have the capability to use the AASHTO equivalence factors for the calculation as a basis for comparison. These programs were developed for both static truck weight measurements and weigh-in-motion measurements. A mechanistic pavement design program was also developed using the damage models in order to generate pavement designs that are compatible with the new mechanistic load equivalence factors.

This volume is the first in a two volume set. Volume 2, provides documentation for all of the computer programs developed on the project.

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